CLAIMS

1. (currently amended) A method for delivering a coherent jet of grinding coolant to a grinding wheel being rotated at a selected peripheral wheel speed in a grinding operation, said method comprising:

a) determining a desired flowrate of coolant for ~~a~~ the grinding operation;

~~obtaining a grinding wheel speed at an interface of a grinding wheel with a workpiece;~~

b) determining coolant pressure required to generate a coolant jet speed approximately equal to the peripheral~~that matches the grinding~~ wheel speed at the coolant flowrate;

c) determining a nozzle discharge area capable of achieving the coolant jet speed~~flowrate at the pressure~~; and

~~determining a nozzle configuration.~~

d) providing a nozzle assembly for delivery of a coherent jet of a grinding coolant at the coolant jet speed, wherein the nozzle assembly comprises a plenum means and at least one nozzle, the nozzle comprising an axis, a proximal end having a maximum dimension D, and a distal end portion containing the nozzle discharge area having a longitudinal cross-section of dimension d; the distal portion having a surface disposed at an angle of at least 30 degrees relative to the axis; and the nozzle characterized by a D:d ratio of at least about 2:1.

2. (previously presented) The method of claim 1, wherein said determining a desired flowrate comprises using a width of the grinding zone.

3. (previously presented) The method of claim 1, wherein said determining a desired flowrate comprises using power consumption during the grinding operation.

4. (currently amended) The method of claim 1, wherein said determining coolant pressure~~a nozzle configuration~~ comprises determining a number and pitch of nozzles.

5. (currently amended) The method of claim 1, wherein said ~~determining a~~ nozzle assembly~~configuration~~ comprises ~~determining to use~~ a nozzle having an asymmetrical transverse cross-section.

6. (currently amended) The method of claim 1, wherein said ~~determining a~~ nozzle ~~configuration comprises determining to use a nozzle having~~has a rectangular transverse cross-section.

7. (previously presented) A grinding tool kit comprising:
a dressing roller sized and shaped to impart a profile to a grinding wheel;
a dressing module sized and shaped for being coupled to a plenum chamber;
said dressing module including a plurality of coherent jet dressing nozzles;
said dressing nozzles being sized and shaped for supplying coolant from the plenum chamber to a dressing zone of the grinding wheel;
a grinding module sized and shaped for being coupled to another plenum chamber;
said grinding module including a plurality of coherent jet grinding nozzles; and
said grinding nozzles being sized and shaped for supplying coolant from the other plenum to a grinding zone of the grinding wheel.

8. (new) The method of claim 1, wherein the nozzle comprises a medial portion having a radius of curvature of at least about 1.5D and an axial length of 3/4D.

9. (new) The method of claim 1 wherein the nozzle has a cylindrical cross-section.

10. (new) The method of claim 1, wherein the ratio D:d is less than or equal to 4:1.

11. (new) The method of claim 1, wherein the plenum means of the nozzle configuration is a plenum chamber

12. (new) The method of claim 11, wherein the plenum chamber further comprises a modular front plate removably fastened to a downstream side of the plenum chamber.

13. (new) The method of claim 12, wherein at least one coherent jet nozzle is disposed for transmitting coolant fluid through the modular front plate.

14. (new) The method of claim 12, wherein a conditioner is disposed within said plenum chamber.

15. (new) A nozzle assembly comprising:

a) a plenum means; and

b) at least one coherent jet nozzle disposed at a downstream end of said plenum means, wherein the coherent jet nozzle comprises:

a proximal end portion having a downstream axis and a transverse dimension D; and

distal end portion; the distal end portion decreasing in transverse dimension in the downstream direction, having a surface disposed at an angle of at least about 30 degrees relative to the axis, and terminating at an outlet having a longitudinal cross-sectional dimension d;

wherein D:d is at least about 2:1.

16. (new) The nozzle assembly of claim 15, wherein the nozzle has a medial portion having an axial dimension of at least about 3/4D.

17. (new) The nozzle assembly of claim 16, wherein the nozzle has a cylindrical cross-section and the medial portion has a radius of curvature of at least about 1.5D.

18. (new) The nozzle assembly of claim 15, further comprising a flow conditioner sized and shaped to substantially match the plenum means, being disposed within the plenum means.

19. (new) The nozzle assembly of claim 15, wherein D:d is no greater than about 4:1.

20. (new) A nozzle assembly comprising:

a) a plenum means;

b) at least one coherent jet nozzle disposed at a downstream end of said plenum means to transmit fluid from the plenum means; and

c) a means for removably coupling the nozzle to the plenum means, wherein the nozzle assembly is configured to generate a spray that increases in transverse dimension by no more than about 4 times over a distance of about 30.5 cm from the nozzle.